

# Flowing Water Design

Rivers Assessment Workshop

San Antonio, TX

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# Target Population

- All NHD+ perennial streams/rivers that are determined to have flowing water during the study index period,
  - Excludes tidal rivers up to head of salt.
  - Includes Great Rivers
- Conduct study over two years
  - Complete initial site evaluation during first year
  - Priority is to sample nonwadeable systems in first year and wadeable systems in second year to minimize climate effects within each class

# Subpopulations for Reporting: Design Guarantees Sample Size

- Nationally
  - All flowing waters
  - All wadeable streams
  - All nonwadeable rivers
- Aggregated Ecoregions (8-10)
  - All flowing waters
  - All wadeable streams
  - All nonwadeable rivers
- Standard Federal Regions
  - All flowing waters
  - All wadeable streams
  - All nonwadeable rivers

# Special subpopulations

- National wild & scenic rivers – Outstanding natural resource waters
- Flowing waters by landuse categories: agriculture, forest, urban, other
  - How are these defined?
  - May report some by ecoregions or EPA regions but only guarantee national

# Other design requirements

- Total sample size 1800 sites
- Balance sample size equally across Strahler order categories: 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup>+. 360 sites per category (note this would enable estimates by each category)
- Resample 450 sites from 2004 wadeable stream assessment to estimate change
- Allow sites to be replaced within each state
- Include sufficient sites so that states may conduct a state-level assessment if they fund they additional site.
- For states that have a current, compatible state-wide probability design that cover all flowing waters, work with them to use their sites instead of the flowing water design sites

# Integrating Search for Reference Sites with Survey Design

- Expect 5% or less of probability sites to result in reference sites – i.e., they are not common and design does nothing to increase that
- IF can identify segments in NHD-Plus that have a greater chance of containing reference sites, then can increase probability of selecting sites in those segments.
  - Use current knowledge to have regions identify segments
  - Rely on GIS coverage screening
- Advantage is that all sites are part of probability design and can be used to produce estimates.